

Application No. 10/616,995

### REMARKS

Applicant has carefully studied the outstanding Official Action mailed on November 17, 2005. This response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Claim 6 stands objected for incorrectly being dependent upon claim 1. This has been corrected by amendment and claim 6 now depends from claim 5.

Claims 1-3, 5-7 stand rejected under 35 USC §103(a) as being anticipated by Garfield et al. (US 6816744) in view of Krausman et al. (US 6095991).

Claim 4 stands rejected under 35 USC §103(a) as being anticipated by Garfield et al. (US 6816744) in view of Krausman et al. (US 6095991), further in view of Triano (US 5991701).

Claims 1-7 stand rejected under 35 USC §103(a) as being anticipated by Garfield et al. (US 6816744) in view of Ishikawa et al. (US 6261247).

Applicant respectfully traverses these rejections and maintains that these rejections are not proper under 35 USC §103(a).

The basic considerations that apply to obviousness rejections under MPEP §2141 are as follows:

- a) the claimed invention must be considered as a whole;
- b) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- c) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- d) reasonable expectation of success is the standard by which obviousness is determined.

When the prior art itself fails to meet **even one** of the above criteria the cited art does not satisfy 35 USC §103(a) and prevents the establishment of the required *prima facie* case of obviousness by the Examiner. See In re Oetiker, 977 F.2d 1443, 1445 (Fed. Cir. 1992); see also In re Rijckaert, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). Moreover, to establish the required case of *prima facie* obviousness, the Examiner is required to demonstrate that the prior art discloses or suggests all the critical elements of the invention, without reference to applicants' specification, and that the existence of these elements enables one skilled in the art to practice the invention. See In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991).

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Moreover, if the prior art methodology must be modified in any way to practice the instant invention the prior art citation must *also* render obvious these modifications or provide a reasonable expectation for the successful practice of the invention with the necessary modifications.

In rejecting claim 1 with the combination of Garfield et al. and Krausman et al., the Examiner makes two arguments – points 4 and 5 of the OA.

In point 4, the Examiner says that the EMG system of Garfield et al. can be combined with the position sensor of Krausman et al. “because the position sensor is compatible with medical monitors such as EMG systems and will allow better monitoring of electromyographic activity.”

The Examiner, in point 5, says that “Garfield et al. discloses three-dimensional mesh plots (col. 4, line 22-23) and three-dimensional vector tracings (col. 29, line 25-26) as possible outputs of the data, all of which convey positional and orientational information.”

This is respectfully traversed. First, regarding point 5, the only place Garfield et al. explains what is meant by a three-dimensional mesh is in claim 31: “The method of claim 1, further comprising generating three dimensional mesh plots of said power density spectral characteristics, said mesh plots displaying energy levels versus frequency versus time of pregnancy”. Thus it is clear that the three dimensions are not spatial dimensions but rather energy, frequency and time. This has nothing to do with the claimed invention and has nothing to do with sensing position. Combining the position sensor of Krausman et al. with the system of Garfield et al. will provide a mesh plot of energy levels versus frequency versus time of pregnancy plus some sort of output of a position sensor. How is the output of the position sensor combined with the non-positional energy-frequency-time plot? Garfield et al. does not teach how. Kaufman et al. does not teach how. The Examiner cannot combine references without specifically showing how the references teach producing the claimed invention, that is, to show how to combine the position sensor of Krausman et al. with the system of Garfield et al. “to process data of said EMG system and three-dimensional position and orientation information from said at least one position sensor to provide an output that comprises electromyographic activity data as a function of the three-dimensional position and orientation of said at least one position sensor” as is claimed in claim 1 of the instant invention. This has not been done, and indeed cannot be done, because the references do not contemplate this. Combining the non-positional energy-frequency-time plot with position cannot possibly produce the electromyographic activity data as a function of the three-dimensional position.

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Further regarding the “three-dimensional vector tracings” of Garfield et al., here again it is respectfully pointed out that these vector tracing have nothing to do with positional information provided by a position sensor. A position sensor tells where an object is in space, e.g., the object is found at Cartesian coordinates  $x=1.25$ ,  $y=2.5$ ,  $z=-0.7$ . The “three-dimensional vector tracings” are not spatial coordinates, rather the  $x$ ,  $y$ ,  $z$  components of the vector, i.e., the vector points in a direction with a magnitude. The three-dimensional vector tracings are simply the  $x$ -component,  $y$ -component and  $z$ -component of a *body surface potential* vector, i.e., how much potential points in the  $x$ -direction, how much in the  $y$ -direction, etc. Attention is respectfully drawn to the passages cited by the Examiner in Garfield et al. regarding the vector:

“A. General Principles

Body surface potential vector analysis is based on Frank's torso experiment model and research results...From measurements in such experiments, Frank found that the geometrical transfer coefficients that relate the dipole source to each point of the body surface potential  $V_n(t)$ . Thus for a set of  $k$  body surface potentials, there is a set of  $k$  equations that can be expressed in matrix form...Based upon this dipole analysis, and making the dipole source a uterus of a pregnant women, the potential at any point and at the same time can be measured to obtain the orthogonal vector component of the action potentials on an XYZ axis. An example of the placement of electrodes on a patient, and a 3-dimensional position of electrodes located on an XYZ axis is shown in FIGS. 12A, 12B, and 12C below. When acquiring the six-point potential at any time, the vector component on X, Y axis at this time is also obtained. It is noted that the direction is that the vector points toward the electrode with higher potential. For example, if  $P_x > 0$ , then the direction is in X positive direction.” Garfield et al. also talks about “determining potential vector characteristics of the signals to identify direction and rate of propagation of uterine electrical activity”.

It is clear that Garfield et al. is talking about vector components and directions of the potential. This has nothing to do with position and spatial information. This has nothing to do with the claimed invention and has nothing to do with sensing position. Combining the position sensor of Krausman et al. with the system of Garfield et al. will provide an energy vector plot plus some sort of output of a position sensor. How is the output of the position sensor combined with the non-positional vector plot? Garfield et al. does not teach how. Kaufman et al. does not teach how. The Examiner cannot combine references without specifically showing how the references teach producing the claimed invention, that is, to

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show how to combine the position sensor of Krausman et al. with the system of Garfield et al. "to process data of said EMG system and three dimensional position and orientation information from said at least one position sensor to provide an output that comprises electromyographic activity data as a function of the three-dimensional position and orientation of said at least one position sensor" as is claimed in claim 1 of the instant invention. This has not been done, and indeed cannot be done, because the references do not contemplate this.

Turning now to point 4, Examiner has stated that the EMG system of Garfield et al. can be combined with the position sensor of Krausman et al. "because the position sensor is compatible with medical monitors such as EMG systems and will allow better monitoring of electromyographic activity."

The Examiner is referring to Kaufman et al. col. 8, lines 22-27: "A further application of the present invention would be to integrate the positional and motion detecting properties of the device with other monitoring instruments, such as oximeters, apnea monitors, respiration monitors, airflow monitors, heart rate monitors, activity and other types of medical monitors for the purposes of gaining a better understanding of the physiological function being measured. For example, the position and motion of the subject's body, head or limbs could provide valuable qualitative information for the rejection of artifacts (e.g., false oximeter indicated periods of breathing abnormalities in sleep apnea studies) and a more accurate assessment of the physiological function being monitored."

The only thing that Kaufman et al. teaches in integrating "the positional and motion detecting properties of the device" with a heart rate monitor is simply to "gain a better understanding of the physiological function being measured". Kaufman et al. explains this means to obtain "valuable qualitative information" "and a more accurate assessment of the physiological function being monitored".

In other words, Kaufman et al. teaches using the position sensor to make sure the data of the physiological sensor is providing good quality data. This means (in the example quoted above from the text of Kaufman et al.) that in the case of an oximeter indicating a breathing abnormality, the position sensor will sense the breathing motion of the person to see if there really is some abnormal breathing. By inference, this means in the case of a heart monitor the position sensor will sense the chest motion of the person to see if there really is some abnormal heart beats. However, Kaufman et al. is silent about utilizing the position sensor to provide an output that comprises physiological activity data as a function of the three-dimensional position and orientation of the position sensor.

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Accordingly, there is absolutely no teaching or explanation whatsoever of how to combine Kaufman et al. with an EMG system to do the claimed invention, namely, how "to process data of said EMG system and three-dimensional position and orientation information from said at least one position sensor to provide an output that comprises electromyographic activity data as a function of the three-dimensional position and orientation of said at least one position sensor." In light of the abovementioned basic considerations that apply to obviousness rejections under MPEP §2141, it is respectfully submitted that it is insufficient to simply combine the position sensor of Krausman et al. with the EMG system of Garfield et al. and to arrive at the claimed invention. The Examiner must show exactly where in the text of the references is there teaching how to do this. The Examiner has not done this, and respectfully it is submitted that no one can, because no such teaching exist in the references. No motive or incentive is found in the references to arrive at the claimed invention. In short, a combination that purportedly provides "better monitoring of electromyographic activity" does not make obvious nor anticipate "a processor in communication with said EMG system and said at least one position sensor, said processor operative to process data of said EMG system and three-dimensional position and orientation information from said at least one position sensor to provide an output that comprises electromyographic activity data as a function of the three-dimensional position and orientation of said at least one position sensor."

The same arguments apply to the rejection of claim 1 in view of the combination of Garfield et al. and Ishikawa et al. The Examiner has noted, "Ishikawa et al. disclose at least one position sensor used to detect three-dimensional position and orientation information (Fig. 3A and 3B), one application of which is to monitor conditions specific to pregnant women, such as pelvic size and cervical dilation."

Here again, just because Ishikawa et al. contemplates measuring pelvic size (or to quote from Ishikawa et al., "first and second transponders are used to measure the distance of separation of the pelvic bones"), does not mean one can combine Ishikawa et al. with Garfield et al. and come up with the claimed invention. There is absolutely no teaching or explanation whatsoever of how to combine Ishikawa et al. with an EMG system to do the claimed invention, namely, how "to process data of said EMG system and three-dimensional position and orientation information from said at least one position sensor to provide an output that comprises electromyographic activity data as a function of the three-dimensional position and orientation of said at least one position sensor." The Examiner must show exactly where in the text of the references is there teaching how to do this. The Examiner has



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not done this, and respectfully it is submitted that no one can, because no such teaching exist in the references. No motive or incentive is found in the references to arrive at the claimed invention.

Accordingly, claims 1-7 are deemed allowable.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,  
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